CLAIMS

What is claimed is:

1. A rectangular concrete tank comprising:

a concrete slab having a slab steel plate anchored thereto, the slab steel plate defining at least one substantially linear concrete side wall location of a rectangular tank outline; and

a plurality of preformed concrete side panels each having metal plates attached along a bottom edge and along opposing side edges, the bottom edge plates being welded in a liquid-tight weld to the slab metal plate defining the concrete side wall location and at least one side metal plate of each side panel being connected to a side metal plate of an adjacent side panel by a connection including at least one liquid-tight weld to define a rectangular tank side wall.

2. The rectangular tilt-up tank of claim 1 further comprising:

a plurality of slab metal plates anchored to the concrete slab defining at least two adjacent substantially linear concrete side wall locations of the rectangular tank outline;

a plurality of preformed concrete side panels each having metal plates attached along a bottom edge and opposing side edges, the bottom edge plates being welded in a liquid-tight weld to a slab metal plate defining a concrete side wall location and at least one side metal plate of each side panel being welded to a side metal plate of an adjacent side panel in a liquid-tight weld to define at least two adjacent rectangular tank side walls;

an L-shaped continuous metal corner brace between adjacent side metal plates of adjacent tank sides, with a leg of the L-shaped continuous metal corner brace abutting the adjacent side metal plates, the adjacent side metal plates being welded in a liquid-tight weld to the abutting leg of the L-shaped continuous metal corner brace to define a liquid-tight rectangular tank corner.

3. The rectangular tilt-up tank of claim 2 wherein the L-shaped continuous metal corner brace includes a diagonal gusset plate extending between a distal end of each

leg of the L-shaped continuous metal corner brace.

4. The rectangular tilt-up tank of claim 1 further comprising a plurality of vertically spaced horizontal post-tensioning sleeves within each preformed concrete side panel configured to define a plurality of continuous horizontal post-tensioning sleeves with adjacent side panels, the continuous post-tensioning sleeves receiving post-tensioned tendons.

5. The rectangular tilt-up tank of claim 2 further comprising a plurality of vertically spaced horizontal post-tensioning sleeves within each preformed concrete side panel configured to define a plurality of continuous horizontal post-tensioning sleeves with adjacent side panels, the continuous post-tensioning channels receiving post-tensioned tendons, the post-tensioned tendons being anchored at the L-shaped continuous metal corner braces adjacent each tank side comprised of the side panels.

6. The rectangular tilt-up tank of claim 2 further comprising:

a plurality of vertically spaced horizontal post-tensioning sleeves within each preformed concrete side panel configured to define a plurality of continuous horizontal post-tensioning sleeves with adjacent side panels, the continuous post-tensioning channels receiving post-tensioned tendons; and

a pulley attached to an L-shaped continuous metal corner brace between a pair of adjacent tank sides with a sheave of the pulley receiving the post-tensioned cable to direct the cable between aligned continuous post-tensioning channels of adjacent tank sides.

7. The rectangular tilt-up tank of claim 1 further comprising a plurality of horizontally spaced vertical post-tensioning sleeves within each preformed concrete side panel and a corresponding vertical post-tensioning anchor embedded in the slab aligned with each vertical post-tensioning sleeve, each vertical post-tensioning sleeve receiving a vertical post-tensioned tendon attached to a corresponding vertical post-tensioning anchor.

8. The rectangular tilt-up tank of claim 4 further comprising a plurality of horizontally spaced vertical post-tensioning sleeves within each preformed concrete side panel and a corresponding vertical post-tensioning anchor embedded in the slab aligned with each vertical post-tensioning sleeve, each vertical post-tensioning sleeve receiving a vertical post-tensioned tendon attached to a corresponding vertical post-tensioning anchor.

9. The rectangular tilt-up tank of claim 1 wherein each slab metal plate has a top surface substantially coplanar with a top surface of the concrete slab.

10. The rectangular tilt-up tank of claim 1 wherein the slab metal plates anchored in the concrete slab comprise a bottom plate of a U-shaped channel.

11. The rectangular tilt-up tank of claim 10 further comprising a plurality of headed anchor studs having a headed end embedded in the concrete and a second end attached to the U-shaped channel.

12. The rectangular tilt-up tank of claim 1 wherein each of the preformed concrete side panels has a lengthwise void adjacent the metal plate along bottom edge for receiving a protective grout.

13. The rectangular tilt-up tank of claim 1 wherein the side metal plates of each side panel do not extend the entire width of the side edges, so that with adjacent side metal panels in abutment a lengthwise grout receptacle is defined.

14. An expansion joint for a concrete panel comprising:

first and second adjacent concrete panel segments disposed with an adjacent panel edge separated by a space;

a continuous metal U-shaped channel embedded lengthwise in each adjacent panel edge of the first and second concrete panel segments on opposite sides of the space with a leg of each U-shaped channel having an unembedded surface and the unembedded surfaces being essentially coplanar;

a sheet of flexible water stop extending between the unembedded surfaces of the U-shaped channel and bridging the space; and

a clamp securing the water stop to each unembedded surface of the U-shaped channels.

15. The expansion joint of claim 14 further comprising a preformed joint filler in the space behind the water stop.

16. The expansion joint of claim 15 further comprising separate clamps of a clamp pair securing the water stop to each unembedded surface on opposite sides of the space and each clamp comprising an L-shaped metal bracket having a first leg abutting a surface of the water stop opposite the unembedded surface and a second leg extending from the first leg and parallel to a second leg of the other clamp of the clamp pair to define a volume between the second legs, the first legs being attached to the unembedded leg.

17. The expansion joint of claim 16 further comprising flexible sealant within the volume.

18. The expansion joint of claim 16 wherein the unembedded surfaces reside within a recess in the concrete at a select depth and the second leg of each L-shaped metal bracket extends a distance about equal to the select depth from the first leg, thereby defining a cavity above each first leg of the clamps, the cavity being filled with a grout.

19. The expansion joint of claim 18 where in the grout is a non-shrink grout.

20. A method of making a rectangular concrete tank comprising:

forming a tank bottom from concrete;

embedding metal plates in the concrete of the tank bottom in a rectangular configuration with the metal plates being at essentially a surface of the concrete;

forming a plurality of rectangular wall panels each having a metal plate along the length of a bottom edge and a metal plate along the length of each side edge;

aligning the wall panels along the rectangular configuration of the embedded metal plates with the metal plates of the bottom edges abutting the metal plates of the tank bottom and the metal plates of the side edges in abutment with the metal plates of the side edges of adjacent wall panels;

joining the metal plates of the bottom edges to the embedded metal plates by water-tight weld; and

joining abutting side edge metal plates by water tight weld.

21. The method of claim 20 further comprising post-tensioning the wall panels with horizontal post-tensioning tendons.

22. The method of claim 20 further comprising post-tensioning the wall panels with vertical post-tensioning tendons.

23. A drain channel form assembly for a concrete tank slab comprising:

a form having substantially flat elongate bottom and a pair of diverging walls extending therefrom, the elongate bottom having a plurality of holes spaced along its length;

a plurality of ground anchors having rods extending therefrom, each ground anchor being anchored in ground underlying form work of the concrete tank slab with the rods extending upward and being received in a hole in the elongate bottom;

a first stay configured to engage the rod beneath the elongate bottom to suspend the elongate bottom above the ground a select distance; and

a second stay configured to engage the rod above the elongate bottom, the second stay and the first stay clamping the elongate bottom therebetween.

24. The drain channel form assembly of claim 23 wherein the rods extending from the ground anchors are threaded and the first and second stays comprise a nut threadably engaging the treaded rods.

25. The drain channel form assembly of claim 24 wherein the first and second stays each further comprise a clamping plate disposed between the nut and the elongate bottom.

26. The drain channel assembly of claim 23 further comprising a flange at a distal end of each diverging wall, the flange being configured to support an elongate cover over an open top of the form.

27. The drain channel assembly of claim 23 further comprising a plurality of lifting eyes attached to an interior surface of each diverging wall.